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ENVIRONMENTAL

Subject:

**Ringwood Mines/Landfill Site
Request for Completion of Excavation Activities within SR-15**

Dear Mr. Gowers:

Date:
January 22, 2013

ARCADIS U.S. Inc. (ARCADIS), on behalf of the Ford Motor Company (Ford), is submitting this technical memorandum on the surficial paint sludge removal activities in SR-15 at the Ringwood Mines/Landfill Site, Ringwood, New Jersey.

Contact:
Erich Zimmerman

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Background

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Removal work recently completed by the United States Environmental Protection Agency (USEPA) on 38 Van Dunk Lane indicated that paint sludge was present within a test trench located along the western property boundary, which is bordered by an electric utility right of way owned by PSEG. Paint sludge in this test trench was identified at the soil/bedrock interface at an approximate depth of 4 feet below grade, and appeared to trend in a westerly direction onto PSEG property, however, the USEPA did not continue excavation and removal activities beyond the 38 Van Dunk Lane property boundary onto the PSEG property.

Our ref:
NJ000604

Pieces of paint sludge were also identified by the USEPA on the ground surface and in several shallow, test pits excavated on property owned by the Borough of Ringwood adjacent to the southwestern property boundary with 38 Van Dunk Lane. The test pits were excavated by the USEPA to confirm the efficacy of removal efforts conducted by New Jersey Department of Environmental Protection (NJDEP) during a 2005 Interim Action. This area was identified as paint sludge removal area SR-15, and the location of this area is shown on the Key Plan included on Figure 1.

ARCADIS submitted a draft work plan outlining proposed investigation and removal activities for this area on 09/18/12. The USEPA provided comments to this

Imagine the result

document on 10/02/12, and a revised work plan was submitted to the agencies on 10/10/12. The USEPA conditionally approved the work plan on 10/12/12, and work commenced in this area on 10/17/12.

Investigatory test trenches were excavated within the PSEG right-of-way to delineate the limits of reworked fill materials containing paint sludge. A total of ten investigatory test pits were excavated at the locations shown on Figure 1, and the areas containing reworked fill materials, pieces of paint sludge. ARCADIS also identified a paint sludge flow at the location identified previously by the USEPA Removal Branch, and removed visible paint sludge from this area. A total of approximately 350 tons of reworked fill materials and paint sludge were removed from this area, and stockpiled for offsite disposal during the period from October 17 through October 25, 2012.

Results of Excavation and Confirmatory Sampling

Post-excavation base samples were collected at a frequency of approximately one (1) sample for every 900 square feet of excavation bottom area, with a minimum of four base samples collected. Side wall samples were collected at a frequency of one (1) sample for every 30 linear feet of excavation side wall, with a minimum of one side wall sample per excavation side wall. Post-excavation sample locations were biased to locations and intervals expected to have the highest potential for impact based on field observations. Post-excavation sampling locations are shown on Figure 2.

A total of seven (7) base and fourteen (14) side wall samples were collected during post-excavation activities. Post-excavation sample analytical results are summarized in Tables 1 and 2.

Volatile Organics

Methylene chloride was reported in post-excavation base samples SR-15-PE-1B (1.0-1.5), SR-15-PE-3B (1.0-1.5), and SR-15-PE-4B (1.0-1.5) at concentrations of 0.0079 mg/kg, 0.013 mg/kg, and 0.0104 mg/kg, respectively. These concentrations are slightly above the NJDEP default Impact to Groundwater (IG) screening criteria of 0.007 mg/kg for this constituent; however, the remaining four post-excavation samples did not contain methylene chloride at concentrations above the NJDEP IG screening criterion. In addition, the mean methylene concentration for all post-excavation base samples was 0.0048 mg/kg, which is less than the NJDEP IG

screening criterion for this constituent. This satisfies the goal of attaining remediation standards through Compliance Averaging outlined recently by the NJDEP¹

Methylene chloride was also detected in post-excavation side wall samples SR-15-PE-1SW (0.5-1.0), SR-15-PE-2SW (0.5-1.0), SR-15-PE-5SW (0.5-1.0), and SR-15-PE-7SW (0.5-1.0) at concentrations of 0.014 mg/kg, 0.0181 mg/kg, 0.0089 mg/kg, and 0.0072 mg/kg, respectively, which are slightly above the NJDEP IG screening criterion of 0.007 mg/kg for this constituent; however, none of the remaining post-excavation side wall samples contained methylene chloride at concentrations above the NJDEP IG screening criterion. In addition, the mean methylene concentration for all post-excavation side wall samples was 0.0048 mg/kg, which is less than the NJDEP IG screening criterion for this constituent. This satisfies the goal of attaining remediation standards through Compliance Averaging outlined recently by the NJDEP¹.

Semivolatile Organics

No Semivolatile organic compounds (SVOCs) were reported at concentrations above their respective NJDEP IG screening criteria in any post-excavation base or side wall samples.

Pesticides/PCBs

The pesticide dieldrin was reported at a concentration of 0.0049 mg/kg in post-excavation side wall sample SR-15-PE-11SW (0.5-1.0). This is slightly above the NJDEP IG screening criterion of 0.003 mg/kg for this constituent; however, no other post-excavation base or side wall samples contained dieldrin at a concentration above its NJDEP IG screening criterion. In addition, the mean dieldrin concentration for all post-excavation side wall samples was 0.00061 mg/kg, which is less than the NJDEP IG screening criterion for this constituent. This satisfies the goal of attaining remediation standards through Compliance Averaging outlined recently by the NJDEP¹.

¹ NJDEP, 2012. Technical Guidance for the Attainment of Remediation Standards.
Version 1.0. September 24, 2012

Metals

The metals aluminum, beryllium, lead, manganese, and mercury were detected in post-excavation base and side wall samples at concentrations greater than their respective IG screening criteria.

- Aluminum was reported at concentrations above its IG screening level of 3,900 mg/kg in all post-excavation base and side wall samples, with concentrations ranging from 7,100 mg/kg to 28,600 mg/kg;
- Beryllium was reported at concentrations above its IG screening level of 0.5 mg/kg in four (4) of the seven (7) post excavation base samples and in ten (10) of fourteen (14) side wall samples, with concentrations ranging from 0.58 mg/kg to 1.1 mg/kg. The mean beryllium concentration detected in all post-excavation base samples was 0.56 mg/kg, while the mean concentration for all post-excavation side wall samples was 0.60 mg/kg;
- Lead was reported in post-excavation side wall samples SR-15-PE-2SW (0.5-1.0), SR-15-PE-11SW (0.5-1.0) and SR-15-PE-12SW (0.5-1.0) at concentrations of 76.9 mg/kg, 282 mg/kg, and 167 mg/kg, respectively, which are above its IG screening level of 59 mg/kg. Lead was not reported in any post-excavation base samples at a concentration above its NJDEP IG screening criterion, and the mean concentration detected in post-excavation side wall samples was 51.5 mg/kg, which is below its NJDEP IG screening criterion of 59 mg/kg. This satisfies the goal of attaining remediation standards through Compliance Averaging outlined recently by the NJDEP¹.
- Manganese was reported at concentrations above its IG screening level of 42 mg/kg in all post-excavation base and side wall samples. Concentrations ranged from 195 mg/kg to 804 mg/kg.
- Mercury was reported in post-excavation side-wall sample SR-15-PE-3SW- (0.5-1.0) at a concentration of 0.13 mg/kg, which is slightly above its NJDEP IG screening criterion of 0.10 mg/kg. Mercury was not reported in any other post-excavation side wall or base samples at a concentration above its NJDEP IG screening criterion, and the mean concentration of all post-excavation side wall samples was 0.042 mg/kg, which is less than its NJDEP IG screening criterion. This satisfies the goal of attaining remediation standards through Compliance Averaging outlined recently by the NJDEP¹.

Concentrations of aluminum and manganese are consistent with those found within clays, and are consistent with the concentrations detected during final post-excavation sampling and background soil sampling conducted across the site. Beryllium concentrations identified within SR-15 are consistent with concentrations detected during post-excavation and background soil sampling conducted previously at the Ringwood Site. In addition, the mean of the beryllium concentrations detected within the post-excavation base and side wall samples is 0.56 mg/kg and 0.60 mg/kg, respectively, which are less than the Overall Highlands Mean Concentration of 0.73 mg/kg detected within rural Highlands area soils during a 2002 study sponsored by the NJDEP². No further action is proposed with respect to aluminum, manganese, and beryllium.

Mean concentrations of lead and mercury detected in post-excavation side wall samples were less than their respective NJDEP IG screening criteria. Post-excavation sampling within SR-15 indicates that the goal of attaining remediation standards through Compliance Averaging has been met, and no further action is proposed with respect to lead or mercury. This area has been backfilled, top soil has been placed, and the area has been stabilized with straw and annual rye grass seed.

Results of Investigatory Test Trenches on Ringwood Borough Property

Exploratory test trenches TT-1B through TT-5B were excavated within land owned by Ringwood Borough adjacent to the Van Dunk Lane cul-de-sac on 11/08 and 11/09/12 to better evaluate the nature of fill materials in this area, evaluate the depth of fill and identify whether exploratory mine pits or soil borrow pits were located in this area. The locations of exploratory test pits are shown on Figure 1. Exploratory test pits extended to a depth of twelve (12) feet, and encountered scattered pieces of paint sludge and compacted municipal debris/trash at several locations. The edge of the Cannon Mine Pit was also likely encountered within Test Trench TT-4B.

All paint sludge pieces encountered during exploratory test pitting work were removed by ARCADIS, and the USEPA did not require any post excavation sampling in this area as the Cannon Mine Pit appears to extend onto this area, and the

² BEM Systems, Inc. Characterization of Ambient Levels of Selected Metals and cPAHs in New Jersey Soils: Year III – Rural Areas of New Jersey Highlands, Valley and Ridge, and Coastal Plain Physiographic Provinces. March 2002.

USEPA anticipates that the ultimate remedial remedy selected will encompass this area.

Conclusions

Based on the results of post-excavation sampling, constituents in remaining soils within SR-15 do not exceed their respective NJDEP IG screening criteria and ARCADIS proposes that no further action is necessary within the portion of SR-15 within the PSEG right of way.

Those portions of SR-15 located within property owned by the Borough of Ringwood will be addressed as part of the ultimate remedial remedy for the Cannon Mine Pit Area.

Please feel free to contact me if you have any questions or require additional information.

Sincerely,

ARCADIS US, Inc



Erich Zimmerman, PE
Project Manager

Copies:

Brian Bussa – Ford
Tim Green – Ford
Eric Pain – Ringwood State Park
Scott Heck – Ringwood Borough